

# 1969

OPERATING  
SUMMARY

## MIDLAND

**water pollution  
control plant**

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JUN 26 1970

ONTARIO WATER  
RESOURCES COMMISSION

ONTARIO WATER RESOURCES COMMISSION

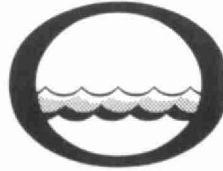
Division of Plant Operations

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*Water management in Ontario*

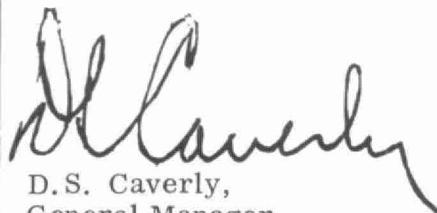
Ontario  
Water Resources  
Commission

135 St.Clair Ave.W.  
Toronto 195  
Ontario

The operating efficiency and financial status of the water pollution control facilities operated for you in 1969 are presented in the following pages.

The regional operations engineer's comments and the statistical data will assist you in gauging the plant's level of performance. A new flow chart and up-to-date design data are also provided.

Various divisions and sections within the Commission have co-operated in providing what we trust is an accurate and concise annual operating summary.



D. S. Caverly,  
General Manager.



D. A. McTavish, P. Eng.,  
Director,  
Division of Plant Operations.

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ONTARIO WATER  
RESOURCES COMMISSION

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**MIDLAND**  
**water pollution control plant**

operated for

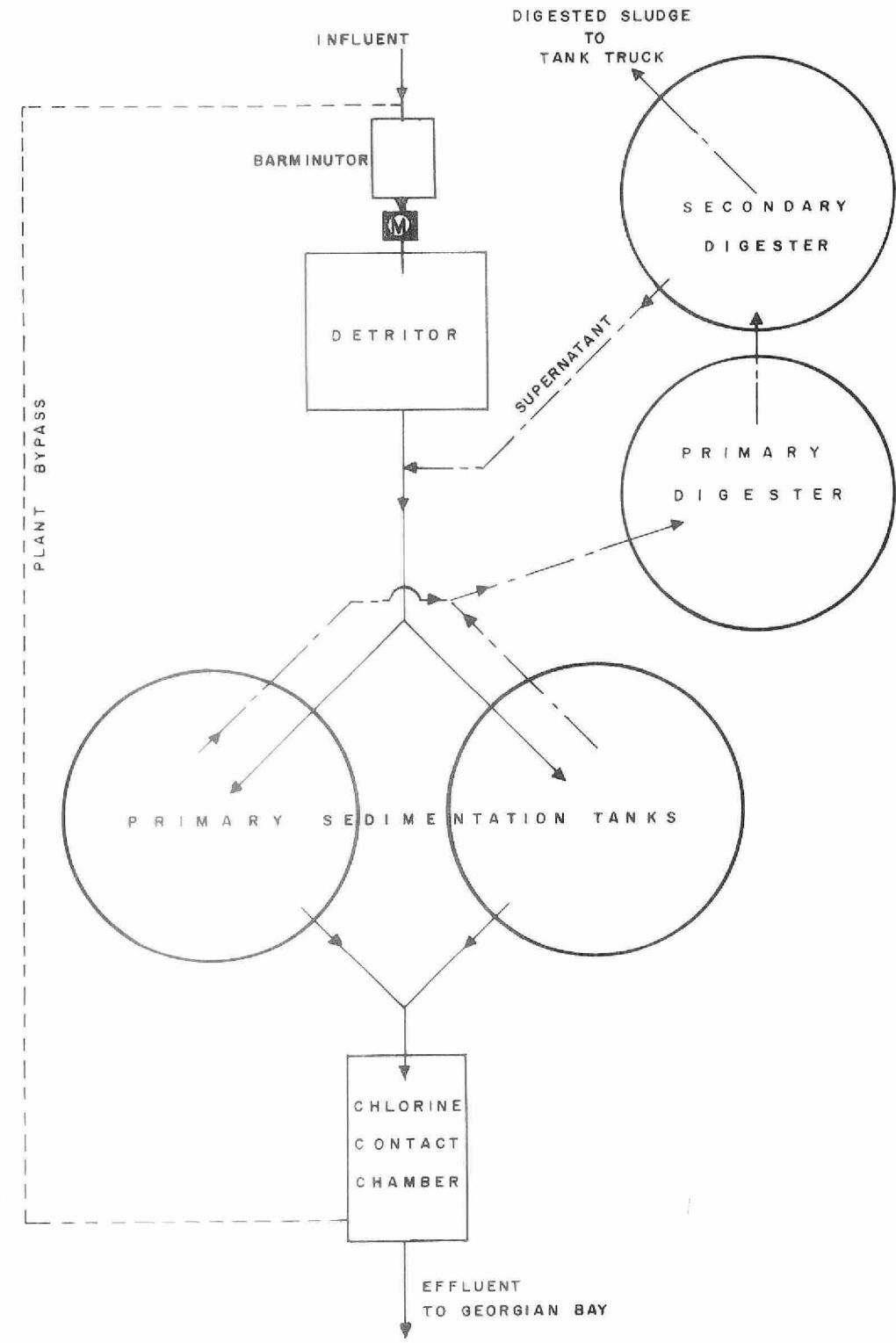
THE TOWN OF MIDLAND

by the

ONTARIO WATER RESOURCES COMMISSION

**1969 ANNUAL OPERATING SUMMARY**

MIDLAND  
WATER POLLUTION CONTROL PLANT



## DESIGN DATA

PROJECT NO.	2-0146-63	TREATMENT	Primary
DESIGN FLOW	1.25 mgd	DESIGN POPULATION	12,500
BOD - Raw Sewage - Removal	225 mg/l 40%	SS - Raw Sewage - Removal	300 mg/l 60%

### PRIMARY TREATMENT

#### Comminution

Type: Barminutor  
Size: One Model C

#### Grit Removal

Type: Dorr Detritor  
Size: One 12' x 12' x 16" (1,200 gal)  
Retention: 1.38 min

#### Primary Sedimentation

Type: Dorr  
Size: Two 50' dia x 8' swd (195,000 gal)  
Retention: 3.75 hours  
Loading: Surface, 319 gal/ft<sup>2</sup>/day  
Weir, 3970 gal/ft/day

### CHLORINATION

Type: W & T, Type A711 (Auto)  
Size: One 1000 lb/day

#### Chlorine Contact Chamber

Size: Irregular (16,200 gal)  
Retention: 18.7 min

### OUTFALL

- 615' of 24" pipe to Georgian Bay

### SLUDGE HANDLING

#### Digestion System - Two-stage

##### Primary --

Type: Babcock-Wilson  
Draft tube mixers (2)  
Size: One 30' dia x 22' (15,600 cu ft or  
97,200 gal)  
Loading: 4.3 lb/cu ft/mo

##### Secondary --

Type: Fixed steel cover  
Size: One 30' dia x 21 $\frac{1}{2}$ ' (15,200 cu ft or  
94,600 gal)  
Total Loading: 2.2 lb/cu ft/mo

### PUMPING STATIONS

#### #1 Pumping Station

Type: Worthington  
Size: Two 780 gpm @ 37' tdh  
One 2600 gpm @ 60' tdh

#### #2 Pumping Station

Type: Flygt (submersible)  
Size: Two 83 gpm @ 30' tdh

# **69 REVIEW**

## GENERAL

During the summer months, the two pumping stations at Vinden Street and Wye Valley were operated by the plant staff. Steps were underway during the latter part of the year to replace a pump at the Vinden Street pumping station.

A four-wheel drive truck complete with snow plough, was purchased. Although it is used as a plant service vehicle, its principal function is to enable all four pumping stations to be inspected daily. This is now possible even during and after snow storms.

The effluent from Decor Metal Products Limited was too strong and too inconsistent to handle at the plant. The Division of Industrial Wastes worked with Decor officials to improve the Company's pretreatment of its effluent until fewer problems were experienced at the sewage treatment plant.

## EXPENDITURE

During 1969, 488 million gallons of sewage were treated at a total operating cost of \$35,187.35. These figures give an average of \$72.11 per million gallons treated and 26 cents per pound of BOD removed, higher than those of 1968 partly because of the lower flows received at the plant.

## SLUDGE DIGESTION and DISPOSAL

A total of 1,025,100 gallons of sludge was treated during 1969. Liquid digested sludge was hauled regularly, and 2970 cubic yards were removed.

The digester was cleaned out in June. The material removed was mostly

grit which had accumulated over the three previous years.

#### PLANT EFFICIENCY

The average influent BOD and suspended solids were 97 mg/l and 221 mg/l respectively. The effluents were 69 mg/l and 96 mg/l, for an average 29% removal of BOD and 57% removal of suspended solids.

A total of 1004 cu. ft. of grit was removed during the year, for an average of 84 cu. ft. of grit removed per month.

#### PLANT FLOWS and CHLORINATION

The total flow to the plant in 1969 was 488 million gallons. The average daily flow was 1.3 mil. gal., while the maximum and minimum flows were 3 and 0.7 mil. gal.

The plant used 37,223 pounds of chlorine during the year at an average dosage of 7.6 mg/l. This amounted to 76 lbs. of chlorine per million gallons treated.

#### CONCLUSIONS

1. The plant was hydraulically overloaded 55% of the time. At the same time, influent BOD and suspended solids were low. Consequently, the plant's efficiency was below average for BOD removal and slightly less than average for suspended solids removal. The storm water separation program should be completed, or plant expansion should be considered.
2. A study made by the Division of Industrial Wastes on the pre-treatment facilities at Decor Metal Products Limited disclosed that the effluent being discharged to the municipal sewer system violated By-law 2742. This report also made recommendations on how the effluent could be made acceptable for discharge, and requested that the company conform with these recommendations as soon as possible. Assuming such action is taken, the plant's efficiency should improve in the coming year.

## PROJECT COSTS

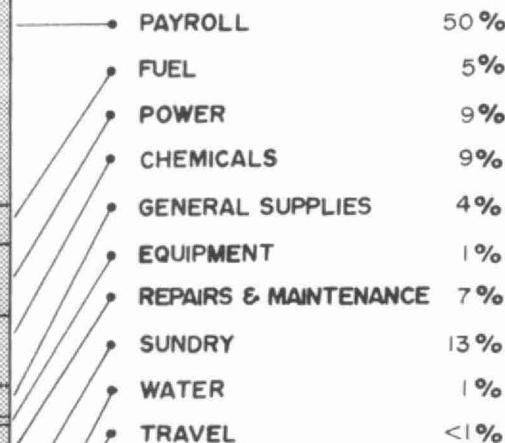
NET CAPITAL COST (Final)	\$822,029.32
DEDUCT - Portion financed by CMHC/MDLB (Final)	<u>496,399.44</u>
Long Term Debt to OWRC	<u>\$325,629.88</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1969	\$ <u>33,104.40</u>
Net Operating	\$ 35,187.35 *
Debt Retirement	6,571.00
Reserve	4,794.22
Interest Charged	<u>18,230.34</u>
TOTAL	\$ <u>64,782.91</u>

### RESERVE ACCOUNT

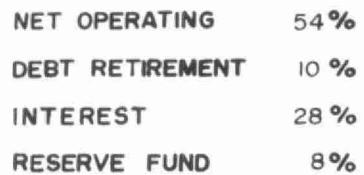
Balance @ January 1, 1969	\$ 23,291.32
Deposited by Municipality	4,794.22
Interest Earned	<u>1,360.88</u>
	\$ 29,336.42
Less Expenditures	<u>5,570.51</u>
Balance @ December 31, 1969	\$ <u>23,875.91</u>

\* Not including interest penalty of \$18.89

## 1969 OPERATING COSTS



## TOTAL ANNUAL COST



## Yearly Operating Costs

YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER MILLION GAL	COST PER LB OF BOD REMOVED
1966	367.78	\$20,703.17	\$56.29	7 cents
1967	480.65	25,872.10	53.83	12 cents
1968	497.54	28,281.17	56.84	17 cents
1969	488.0	35,187.35	72.11	26 cents

## Monthly Operating Costs

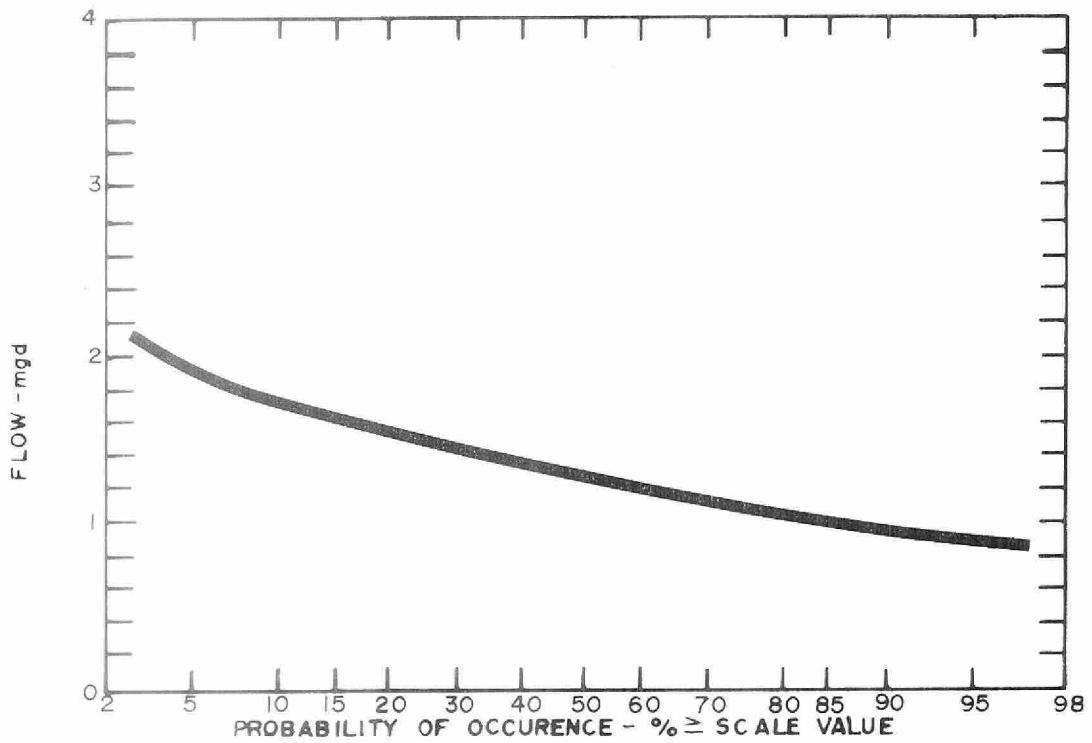
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDAY *	WATER	TRAVEL
JAN	2897.93	2155.47	-	210.70	270.76	-	51.65	-	59.55	16.85	123.80	9.15
FEB	2379.73	1130.74	-	257.05	280.15	-	74.65	65.43	87.27	476.04	-	8.40
MAR	3235.17	1159.65	-	117.13	287.98	1198.05	129.54	-	59.81	211.76	-	11.25
APR	2660.29	1344.41	117.26	190.18	281.66	-	181.07	25.16	267.33	231.77	-	21.45
MAY	2735.07	1412.60	105.45	118.45	264.44	-	59.11	73.45	419.14	271.18	-	11.25
JUNE	2306.91	1351.70	131.10	100.57	262.06	-	191.39	110.64	124.77	22.98	-	11.70
JULY	3869.02	1466.51	44.32	65.87	227.20	1051.05	201.20	-	314.41	300.70	187.56	10.20
AUG	3993.96	1676.78	132.93	-	254.35	-	80.54	-	119.37	1708.69	-	21.30
SEPT	2284.72	1255.05	100.87	113.54	204.35	-	211.55	45.16	104.80	249.40	-	-
OCT	2347.19	1378.04	21.60	-	235.75	-	84.07	-	400.72	227.01	-	-
NOV	2141.70	1222.15	14.40	178.87	241.64	-	107.88	-	63.63	73.07	209.56	30.50
DEC	4335.66	1179.76	-	210.07	263.33	1051.05	152.14	-	544.21	935.10	-	-
<b>TOTAL</b>	<b>35187.35</b>	<b>16732.86</b>	<b>667.93</b>	<b>1622.43</b>	<b>3073.67</b>	<b>3300.15</b>	<b>1524.79</b>	<b>319.84</b>	<b>2565.01</b>	<b>4724.55</b>	<b>520.92</b>	<b>135.20</b>

\* SUNDAY INCLUDES SLUDGE HAULAGE COSTS WHICH WERE \$3289.52 and include cost of digester cleanout

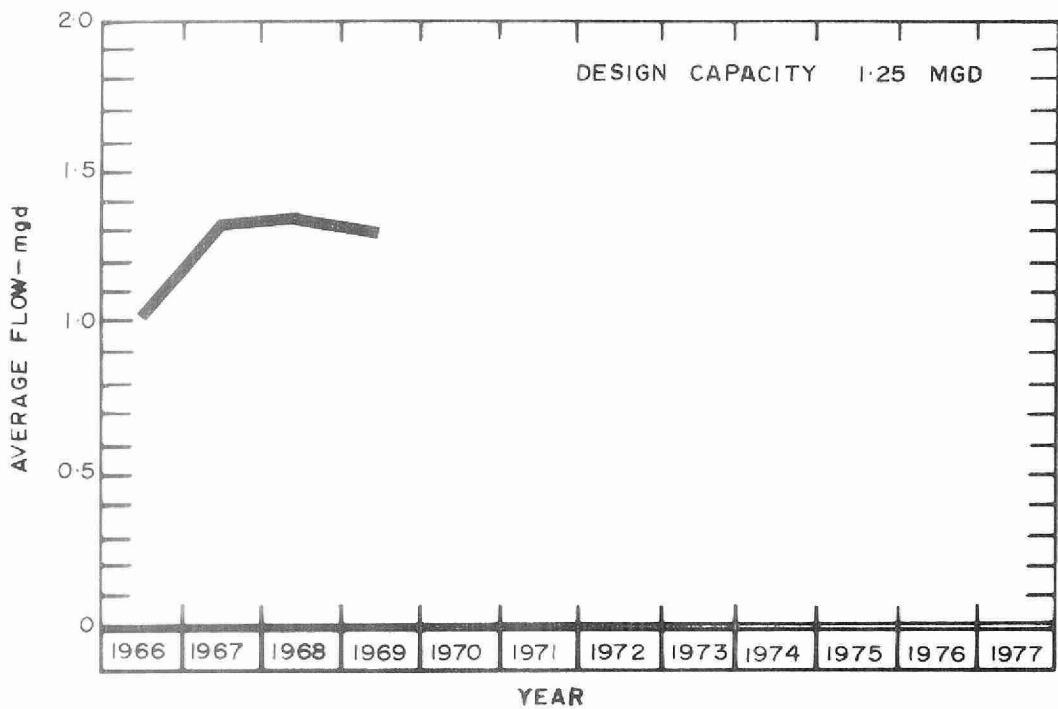
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**PROCESS DATA**

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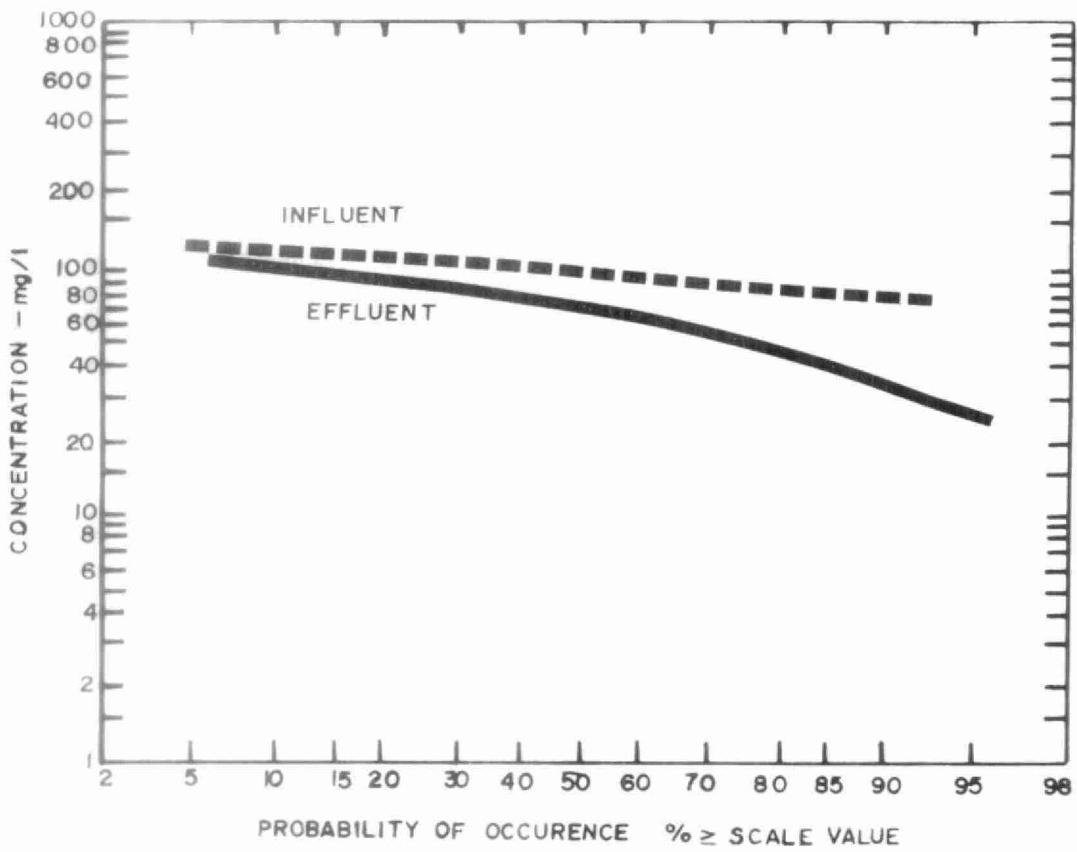


## FLows

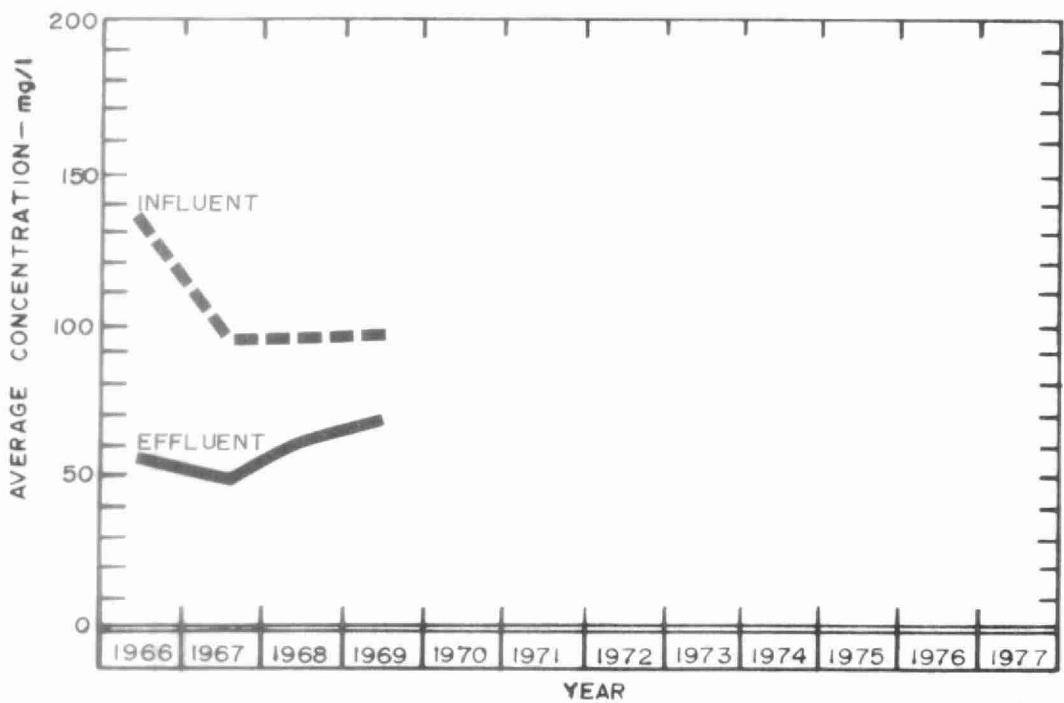


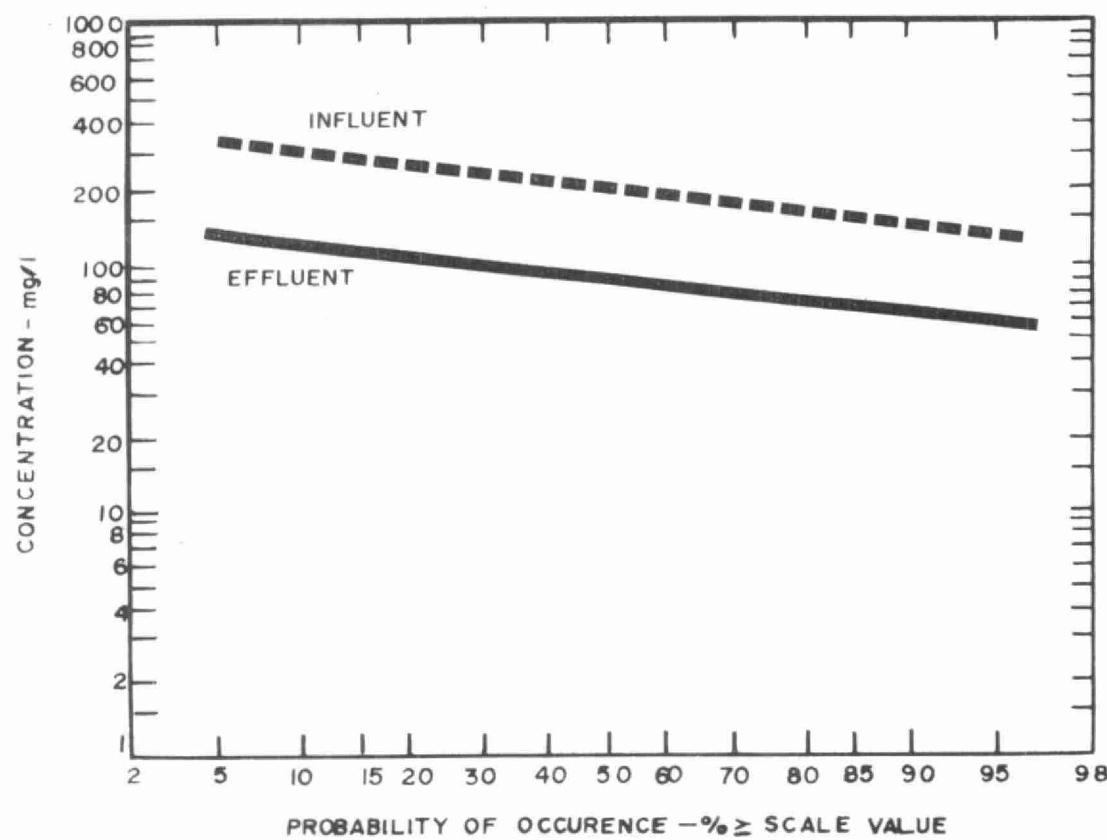
## PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM DAILY FLOW mil gal	MINIMUM DAILY FLOW mil gal	CHLORINE USED $10^3$ pounds	DOSAGE mg/l
JAN	.40.3	1.3	2.0	1.0	2.88	7.1
FEB	34.0	1.2	1.4	.9	2.95	8.7
MAR	49.3	1.6	2.6	1.0	3.20	6.5
APR	51.9	1.7	2.2	1.2	3.15	6.1
MAY	50.6	1.6	3.0	1.1	2.73	5.4
JUNE	37.6	1.3	1.9	.9	2.95	7.9
JULY	38.9	1.3	1.8	.9	3.11	8.0
AUG	34.5	1.1	1.3	.7	3.45	10.0
SEPT	34.3	1.1	1.6	.7	3.04	8.8
OCT	38.8	1.2	1.7	.9	3.52	9.1
NOV	41.7	1.4	2.2	1.1	3.33	6.0
DEC	36.1	1.2	1.4	.8	2.91	8.1
TOTAL	488.0	-	-	-	37.22	-
AVERAGE	-	1.3	-	-	3.10	7.6

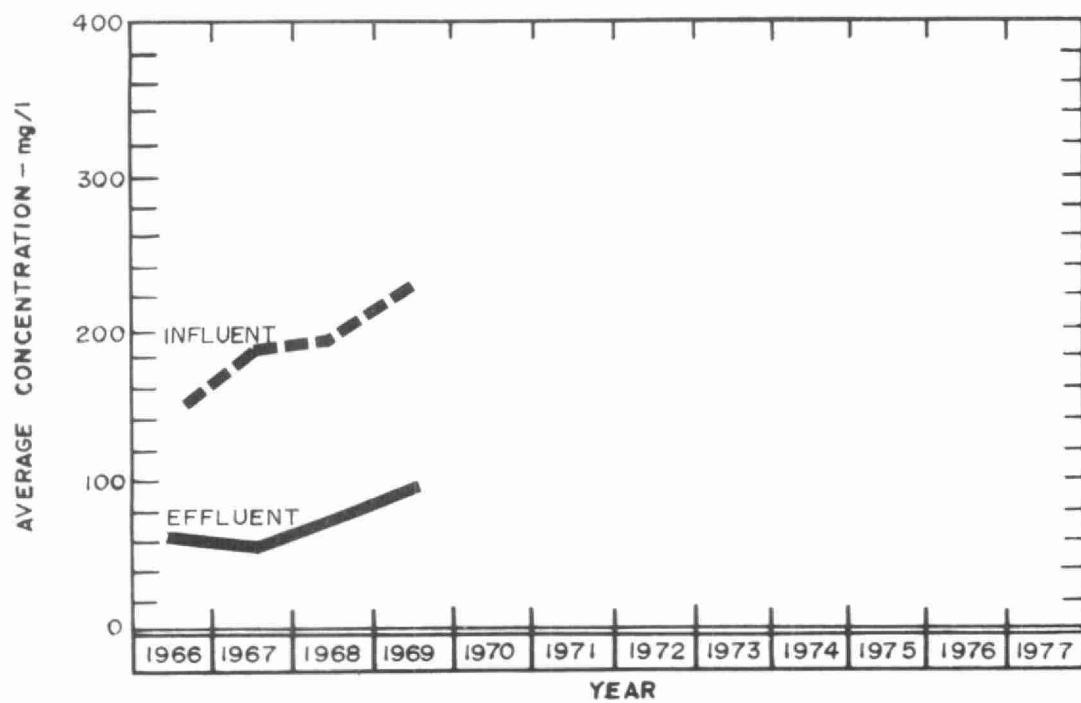


## BIOCHEMICAL OXYGEN DEMAND



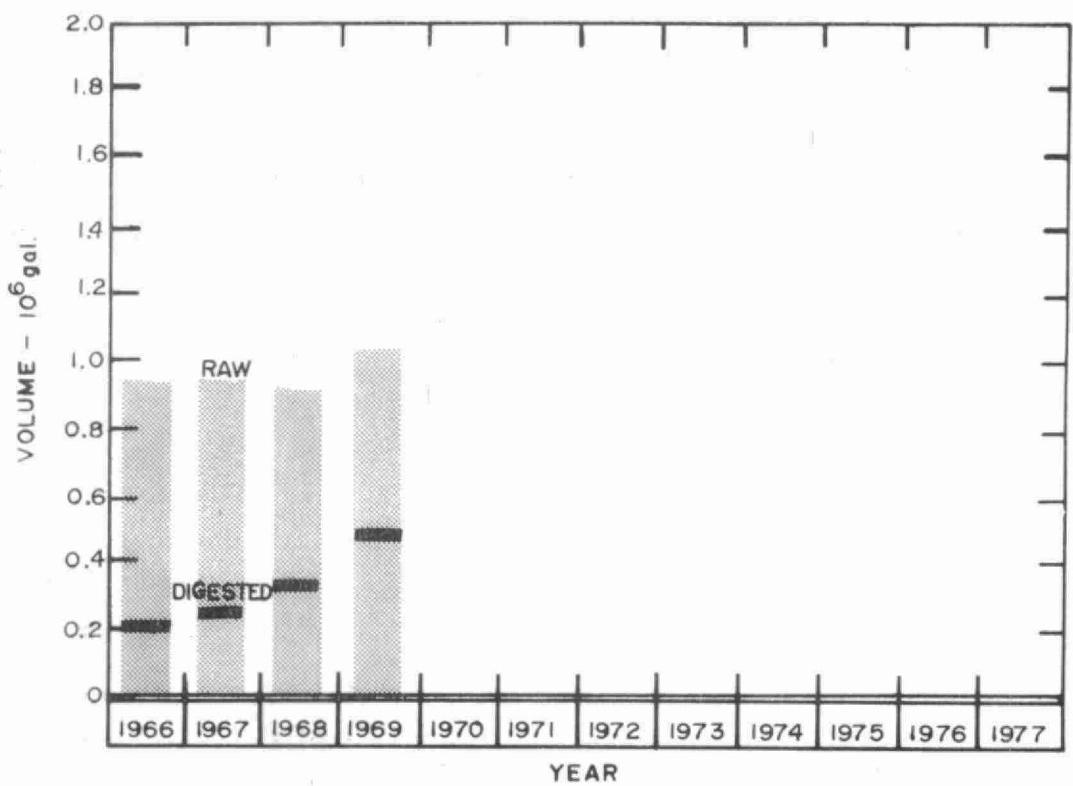


## SUSPENDED SOLIDS

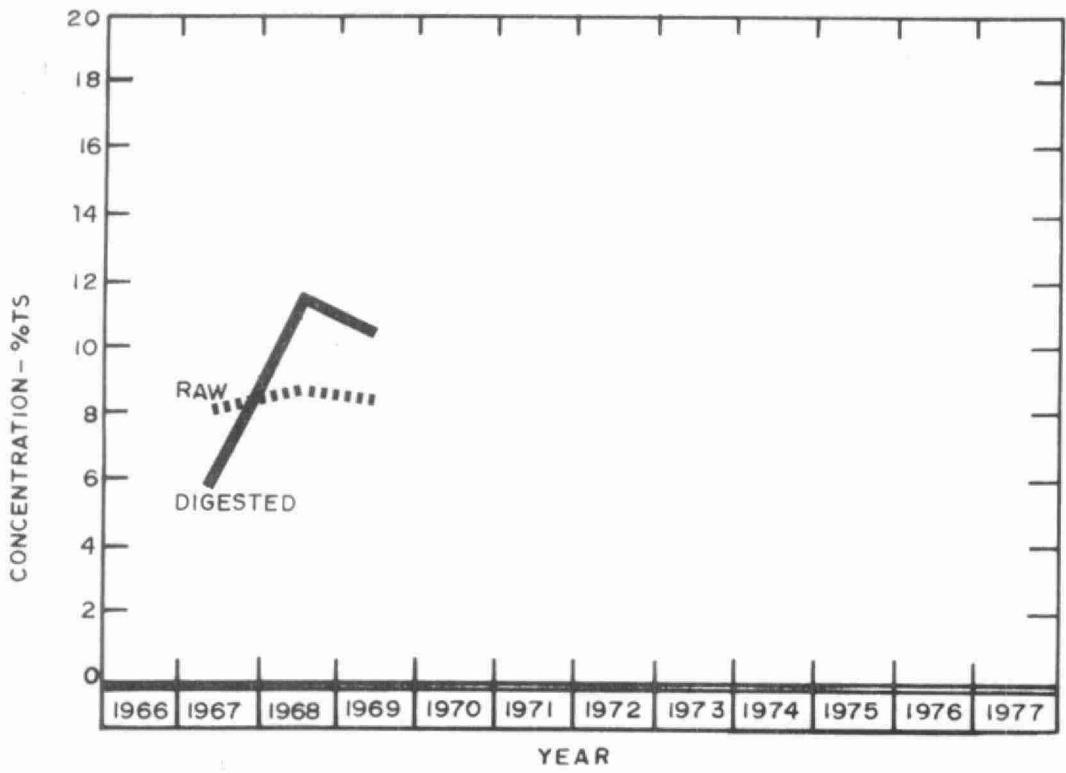


## PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT REMOVAL cu ft	
	INF. mg/l	EFF. mg/l	REDUCTION		INF. CONCN mg/l	EFF. CONCN mg/l	REDUCTION			
			%	10 <sup>3</sup> pounds			%	10 <sup>3</sup> pounds		
JAN	100	107	0	0	135	80	41	22.2	42	
FEB	100	85	15	5.1	210	85	60	42.4	23	
MAR	180	110	39	34.5	180	90	50	44.3	80	
APR	32	26	19	3.1	160	140	13	10.4	85	
MAY	90	70	22	10.1	310	80	74	116.4	114	
JUNE	90	40	56	18.8	315	110	65	77.0	185	
JULY	102	58	43	17.1	255	105	59	58.3	198	
AUG	84	62	26	7.6	220	125	43	32.8	30	
SEPT	115	75	35	13.7	240	85	64	53.1	108	
OCT	100	57	43	16.7	270	112	59	61.3	63	
NOV	65	54	16	4.6	155	70	55	35.5	58	
DEC	104	87	16	6.1	200	65	68	48.8	18	
TOTAL	-	-	-	-	-	-	-	-	1004	
AVERAGE	97	69	29	12.4	221	96	57	50.2	84	



## DIGESTION



## SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	DEWATERED	LIQUID
	10 <sup>3</sup> gal	%	%	10 <sup>3</sup> gal	%	%	10 <sup>3</sup> gal	%	cu yd	cu yd
JAN	73.7	5.4	59	35.0	-	-	43.3	-	0	210
FEB	69.1	1.7	52	20.0	9.8	45	49.1	-	0	120
MAR	84.4	-	-	26.0	-	-	59.9	-	0	155
APR	78.4	17.7	36	23.0	16.5	40	53.9	-	0	137
MAY	92.2	5.0	39	25.0	-	-	67.3	.4	0	150
JUNE	90.2	14.0	38	234.9*	14.8	36	80.3	-	0	1395
JULY	110.2	9.8	-	10.0	5.9	41	15.0	-	0	60
AUG	84.5	16.1	55	25.3	-	-	59.5	.5	0	150
SEPT	87.8	7.0	65	23.2	9.8	24	64.8	-	0	138
OCT	91.8	7.7	-	22.2	-	-	66.6	2.3	0	132
NOV	84.0	7.6	44	18.2	1.5	28	61.0	1.4	0	137
DEC	78.8	3.4	36	31.4	14.6	32	47.8	-	0	186
TOTAL	1025.1	-	-	494.2	-	-	668.4	-	0	2970
AVERAGE	85.4	8.6	47	41.1	10.4	35	55.7	-	0	248

\* Digester cleaning

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Date Due



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